REMARKS/ARGUMENTS

Reconsideration is requested.

The Examiner has stated that the oath or declaration is defective for the reason that two of the inventors' signatures are missing. It is noted that three declarations have been filed in this application signed by all of the inventors including the sole heir of the deceased inventor. Accordingly, this objection should be withdrawn.

Claims 4 and 15 stand rejected under 35 U.S.C. 102(b) as being anticipated by Shen et al. (Analytical Chemistry, vol. 73, pp. 612-619, 2001). For the reasons set forth hereinafter, it is requested that the Examiner reconsider and withdraw this objection.

Claim 4 recites that the bumpy structure ranging from nanometer to several dozen micro-meter is arranged so that a plurality of concave portions are regularly formed on the sample support surface. Claim 15 further recites the step of repeatedly said method comprising the step of repeatedly disposing concave portions on a surface of a substrate in accordance with lithography so that an interval of the concave portions is not less than 1nm and less than 1μm and a width of each of the concave portions is not less than 10nm and less than 1μm, so as to form the sample support surface on the surface of the substrate. These novel recitations in claims 4 and 15 are not anticipated or rendered obvious by the teachings of Shen.

Shen is cited in the specification of the present application (see paragraph [0012] of US 2009/0314936 A1) as one example describing a DIOS target having an irregularly bumpy struc-ture formed by conventional etching. Shen fails, however, to disclose a sample target having a regularly bumpy structure.

The Examiner alleges that Shen discloses, in Fig. 4, a regularly formed structure. But as described in page 616, column 2, line 2, to page 617, column 1, line 4, Shen's photo patterning takes advantage of light to stimulate etching to create patterned grids, spots, and other shapes only in a part for which light is not shielded by a mask. Further, Figure 4 shows, as described in page 616, column 2, lines 8 to 10, a bulk silicon surface on which sharp patterns of porous silicon are formed. Specifically, the spots shown as darkened in Fig. 4 have a bumpy structure as the one shown in Fig. 3. The bumpy structure is, as shown in Fig. 3, an irregularly formed one. Therefore, the structure shown in Fig. 4 is not a regularly-formed, finely bumpy structure of not less than 1 nm and less than 1 μm, unlike the sample target of claim 4 of the present application.

Assumed as the patterned spots of Shen are laser spots on a sample plate (with a general, commercially-available device, a 100μm- to 200μm-area of the sample plate is irradiated with a laser per irradiation). Thus, the size of each spot of Shen is completely different from that of each concave portion of the present invention. According to the descriptions for Fig. 4 of Shen, 100 or 1000 spots are formed in a 3 cm x 3 cm surface. Namely, each spot of Shen has a diameter of a few hundred microns. Also from this, it is clear that the size of each spot of Shen is completely different from that of each concave portion of the present application. Further, Shen teaches the object of forming such patterned spots is to aid visualization of sample spots for automated analysis of a number of samples.

With regard to claim 15 of the present application, the Examiner alleges Shen describes in page 613, the right column, and pages 616 to 617, repeatedly disposing concave portions on a surface of a substrate in accordance with lithography so that an interval of the concave portions is not less than 10nm and less than 1μm and a width of each of the concave portions is not less

than 10nm and less than 1μm. Applicant disagrees with the allegation for the same reasons set forth herein with respect to claim 4.

In addition, as is clear from Example 5 and Comparative Example 10 in the present specification, using a sample target prepared with reference to the method of Shen, the sample target of claim 4 of the present application provides the effect of outstandingly improving stability of analysis results, as a result of its regularly bumpy structure.

Accordingly, claims 4 and 5 are clearly allowable over the teachings of Shen.

Claims 1-3, 5-15 and 17-19 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Shen in view of Wood et al. (U.S. Patent Application Publication No. 2004/0094705). It is requested that the Examiner reconsider and withdraw this rejection.

As an initial matter, although claim 15 is listed in this rejection, it is noted that pages 5-8 of the Office Action fails to discuss why the claimed subject matter would have been obvious. It appears there might have been a typographical error in the Office Action, and the Examiner had intended to list only claims 1-3, 5-**14** and 17-19. Clarification is requested.

Claim 1 and the claims depending therefrom recite the sample support surface as having a finely bumpy structure of an order ranging from nanometer to several dozen micrometer, and a face of the surface coated with metal. The dependent claims further define the finely bumpy structure.

Claim 13 recites the support surface of claim 1 and further recites the step of coating the face of the surface with metal.

Dependent claim 14, like claim 15, further recites the step of repeating forming finely bumpy structures each of which has concave portions or convex portions on a surface of a substrate in accordance with lithography so that an interval of the concave portions or the

convex portions ranges from 1nm to 10μm and a depth of each of the concave portions ranges from 10nm to 1μm, before performing the step of coating the face of the sample support surface with the metal, so as to form the sample support surface on the surface of the substrate.

Applicants submit that the novel recitations of claims 1-3, 5-14 and 17-19 are not rendered obvious by the teachings of Shen for the reasons submitted herein with respect to the rejection of claims 4 and 15.

As discussed above, the Examiner's allegation that Shen describes a sample target having a regularly bumpy structure is in error. The present invention cannot be obtained from Shen's teachings.

Further, Shen describes the use of UV-absorbing porous silicon to allow transfer of laser energy to a sample, and this is significant to enable ionization with a DIOS target in a matrix-free manner (page 612, column 2, lines 13 to 25, of Shen).

Therefore, one of ordinary skill in the art who learns from the cited disclosure that the UV-absorbing surface of porous silicon is a significant feature for ionization would not have considered covering the surface of porous silicon because such a modification changes the operation of Shen's technique and teaches away from Applicants' invention.

The secondary reference to Wood was cited by the Examiner for its teaching of the face of a sample support surface coated with metal. Wood fails to address the deficiencies of Shen with respect to the novel recitations in claims 1-3, 5-14 and 17-19.

The novel recitations in claims 1-3, 5-14 and 17-19, therefore, would not have been obtained from the teachings of Shen and Wood by one of ordinary skill in the art, and thus are not obvious.

Claim 16 stands rejected under 35 U.S.C. 103(a) as being unpatentable over the teachings of Shen and Wood as applied to claim 14, and further in view of Regnier et al. (U.S. Patent Application Publication No. 2007/0054416). Claim 16 depends from claims 13-14 and thus is believed to be allowable over the teachings of Shen and Wood for the reasons set forth herein with respect to the preceding rejection.

Regnier was cited by the Examiner for its limited teaching of forming concave portions by using an electron beam drawing apparatus as the lithography. Regnier fails to address the deficiencies of Shen and Wood with respect to the novel recitations in claims 13-14 and 16.

In view of the above remarks it is submitted that all of the claims in the present application should now be allowable, and prompt allowance thereof is earnestly solicited.

Respectfully submitted,

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